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COMMODITY DRAIN FROM FORESTS OF THE LAKE STATES, 1948

ARTHUR G. HORN

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LAKE STATES FOREST EXPERIMENT STATION

U. S. DEPARTMENT OF AGRICULTURE - FOREST SERVICE
UNIVERSITY FARM, ST. PAUL 1, MINN.

E. L. DEMMON, DIRECTOR

U. S. Department of Agriculture, Forest Service
Lake States Forest Experiment Station [1]

Station Paper No. 20 April 1950

COMMODITY DRAIN FROM FORESTS OF THE LAKE STATES - 1948

By Arthur G. Horn, Forest Economist [2]

INTRODUCTION

Shortly after World War II, a field survey was initiated to determine more accurately the forest resource facts of the Lake States region. Collection and compilation of timber drain statistics was one of several important phases of this survey. As a means of determining the annual drain, the Station obtains annual or periodic reports for the principal forest industries, covering, in some cases, the year's production of finished products; in other cases, the receipts of sawlogs and bolts at the plants. From these the Station computes commodity drain, that is, the amount of live merchantable timber removed through cutting including logging waste during the year.

Frequent requests for production and drain data resulting from the survey are received. To more effectively meet these demands, we have prepared this publication giving Lake States production and drain figures for 1948. Similar reports for 1946 and 1947 are available on request. In using the data, it is important to keep in mind the standards and definitions used in compiling the information. (See definitions.)

Basis for Production Statistics

Since lumber production figures were not reported by the Bureau of the Census for 1948, the Station prepared an estimate based on comparison of 1946-1948 output of larger mills. To further strengthen this estimate, a spot-check of railroad carloadings for 1946, 1947, and 1948 was made at several of the general offices of railroad companies. This was supplemented by a canvass of mills adjacent to state boundaries to determine interstate movement of sawlogs.

For veneer, pulp distillation, excelsior, and cooperage industries, a complete canvass was made of all known plants early in 1949. The volume of logs and bolts received at these plants during the calendar year was used as a basis for production estimates.

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[1] Maintained at University Farm, St. Paul, Minnesota, in cooperation with the University of Minnesota.

[2] The author gratefully acknowledges the assistance provided in some of the field work by J. R. Neetzel, M. L. Heinselman, H. M. Seeley, Z. A. Zasada, and W. M. Zillgitt, Foresters, Lake States Forest Experiment Station; and W. W. Barton, Forester, R-9 Regional Office. Acknowledgment is also due to the many owners and operators of wood-using mills and plants in the Lake States region who so kindly cooperated and furnished the basic information so necessary for this report.

Production statistics for such minor items as piling, poles, hewn ties and mine timbers, lagging, etc., were obtained by using results of 1947 survey of these items and comparing with reliable production indexes for 1947-48; i.e., annual underground ore production by states, pole and piling receipts of several large wholesalers and distributors who handle most of the regional output. Because financial limitations precluded making special surveys, estimates for fuelwood, posts, and miscellaneous items were based largely on surveys made during the latter stages of World War II. Some adjustments were made on the basis of more recent findings from wholesalers and distributors.

Conversion Factors

The Station, in conducting production surveys, has collected supplemental information on each product as to percent of wood volume obtained from live, dead, cull trees, and byproduct material; also proportion of volume cut from saw-timber and pole-timber trees. Gross volumes of individual products were determined by information furnished by industry. For example, stock records for posts, poles, and piling showed number of pieces by length, top, and butt diameters. Such information made possible calculations of gross volume for each product. By incorporating these findings with data collected during a previous field survey (1936-37), a set of conversion and waste factors have been made which are closely in line with present utilization standards of wood-using industries.

General Limitations of Data

The forest survey accuracy goal for drain data is ± 5 percent per billion cubic feet, which would permit a standard error of slightly more than 6 percent on the 1948 estimate for the Lake States. Because of absence of an accurate census of lumber and fuelwood for that year, the estimates presented here may not be within that limit. We feel, however, that the estimates are the best obtainable at this time and will serve a very useful purpose. Figures for most products are within the proposed limits. Some adjustments may be made later if better figures for lumber and fuelwood become available.

Survey Definitions

Commodity Production

The gross volume of a forest product produced from any class of material from commercial or noncommercial forest lands. Production has been expressed in the following standard survey units: Board-feet log scale International 1/4-inch rule, feet board measure lumber tally; cord (4x4x8 feet), rough wood basis; number of pieces; and number of cubic feet (inside bark).

Commodity Drain

The net volume of timber removed from growing stock on commercial forest lands through cutting and logging waste during the year, expressed in board feet, International 1/4-inch rule and cubic feet (i.b.).

Drain from Saw-Timber Trees

The net volume (board feet, International 1/4-inch) of the log portion in softwood trees 9 inches and larger and hardwood trees 11 inches and larger, d.b.h., removed or wasted during logging operations. The cubic-foot volume shown includes both the saw-timber equivalent plus the volume in the tops of softwood trees to a 4-inch minimum.

Drain from Pole-Timber Trees

The net volume in cubic feet (i.b.) of pole timber removed through cutting and logging waste during the year. Included in this class are softwood trees from 5.0- to 8.9-inch and hardwood trees from 5.0- to 10.9-inch d.b.h. It includes cubic foot volume found in the tree stems to a minimum top diameter of 4 inches (i.b.).

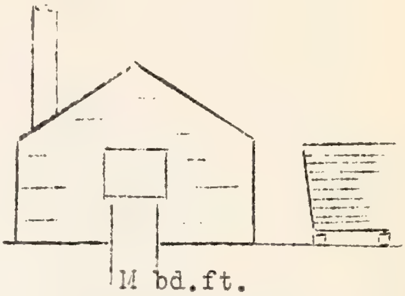
HIGHLIGHTS OF THE COMMODITY DRAIN SURVEY

1948

PRODUCTION OF MAJOR PRODUCTS

Lumber Production

Nearly 1 billion 3 hundred million board feet of lumber was produced in 1948 by 4,000 or more sawmills in the Lake States. This was the largest annual cut since 1930. Michigan accounted for nearly one-half of the total output. Wisconsin was second and Minnesota third with about 34 percent and 18 percent respectively.



	M bd.ft. Lumber tally
Minnesota	240,000
Wisconsin	440,000
Michigan	615,000
Total	1,295,000

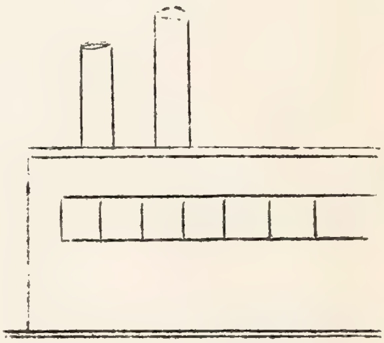
Pulpwood Production

Pulpwood production in 1948 amounted to approximately 2,184,000 standard cords (rough wood basis). This was approximately 8 percent above that of 1947, but was 3 percent less than that of the peak production year 1946.

Wisconsin mills received 1,248,000 cords, about 57 percent of the total pulpwood produced. Minnesota mills took 28 percent and Michigan mills 13 percent. The remaining one or two percent represents pulpwood shipped to mills outside the region.

Canada shipped about 760,000 cords and Montana and Colorado combined sent slightly more than 35,000 cords to Lake States mills.

Total domestic and imported wood receipts for 1948 amounted to nearly 3 million cords.

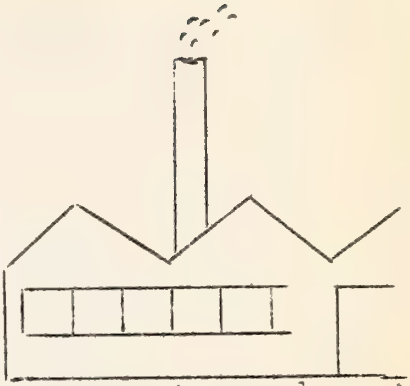


	Standard cords (Unpeeled)
Minnesota	987,000
Wisconsin	468,000
Michigan	729,000
Total	2,184,000

Veneer Log Production

Approximately 117 million board feet of veneer logs were cut from Lake States timber and shipped to some 100 or more veneer mills operating in the region. Nearly two-thirds of the logs were produced in Michigan.

Commercial veneer plants, which manufacture mostly high-grade veneers and panels, consumed about 75 percent of the veneer logs produced. The container veneer industry, manufacturing cheese boxes, berry boxes, picnic baskets, fruit and vegetable baskets, hampers, etc., used 25 percent of the logs plus 16,210 cords cut for heading stock.

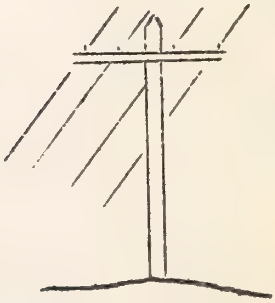


	M bd.ft. (Int'l. $\frac{1}{4}$-inch)
Minnesota	7,000
Wisconsin	32,000
Michigan	78,000
Total	117,000

Miscellaneous Products

Utility Poles

Based on industry reports it is estimated that about 216,000 utility poles were produced in 1948. Although cedar was the principal species cut for poles, considerable jack pine was cut, seasoned, and treated, and used in constructing and maintaining lines in Minnesota and neighboring states.



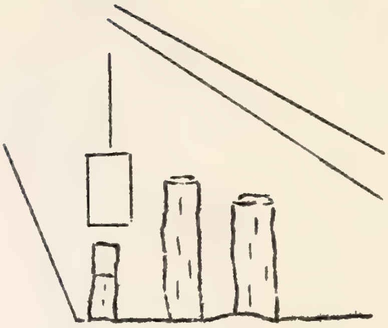
	Number of Pieces
Minnesota	140,000
Wisconsin	16,000
Michigan	60,000
Total	216,000

Minnesota produced most of the northern pine piling and Wisconsin practically all of the hardwood piling in the region. Lake States production was between 10,000 or 11,000 pieces, equivalent to 275,000 lineal feet, which was considerably less than either the 1946 or 1947 output.

Continued heavy mining of Lake States ore has brought about a steady demand for mine timbers, mine poles, lagging, and other timber items. Production of wood for the mines in 1948 amounted to nearly 8 million cubic feet in the region. Of this amount about 3½ million cubic feet was mine timbers, 2¼ million lagging, and another 2¼ million miscellaneous mine products. Tamarack, cedar, and maple were the species most heavily cut for mine materials.

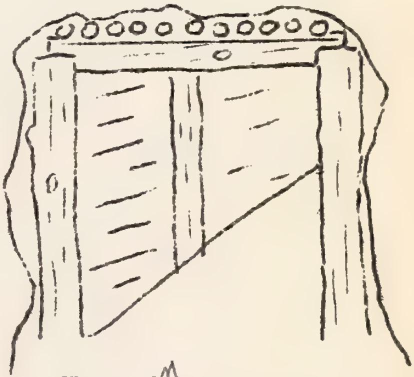
Production of relatively stable products such as fuelwood, fence posts, shingles, lath, and cabin logs, continued at about the same general level as maintained during the past four or five years. Chemical wood, excelsior bolts, and cooperage logs on the other hand dropped to lower levels. In the case of chemical wood the drop amounted to as much as 40 percent over a year or two ago.

Piling



	No. of Lineal Feet
Minnesota	100,000
Wisconsin	175,000
Michigan	-
Total	275,000

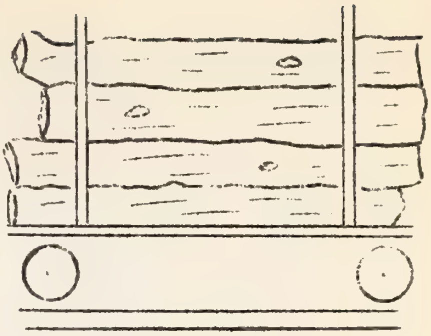
Mining Products

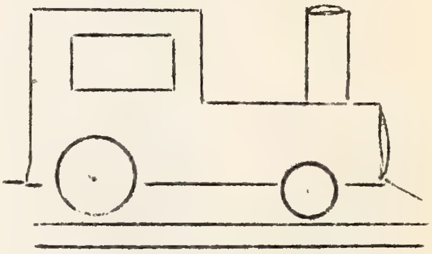


	No. of M Cubic Feet
Minnesota	2,770
Wisconsin	390
Michigan	4,460
Total	7,620

Interstate Log Movement

Movement of logs between the three Lake States continued at a rather brisk rate, especially between Michigan and Wisconsin. Logs cut in Michigan and shipped or trucked to Wisconsin's larger sawmills and other primary wood-using plants amounted to nearly 60 million board feet (International 1/4-inch rule) in 1948. Minnesota shipments to Wisconsin, which consisted almost entirely of veneer logs, amounted to a little less than 5 million board feet. Wisconsin in turn, shipped approximately 9½ million feet to Michigan and about 1 million to Minnesota.





~~M~~ bd.ft. (Int'l. ¼-inch)

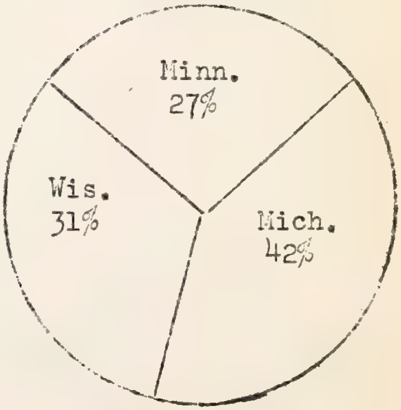
Michigan to Wisconsin:
  30 million sawlogs
  27 million veneer logs
Minnesota to Wisconsin:
  5 million veneer logs
Wisconsin to Michigan:
  10 million sawlogs
Wisconsin to Minnesota:
  1 million sawlogs

DRAIN

Timber Drain From Cutting

The total commodity drain on Lake States forests during 1948 amounted to approximately 675 million cubic feet. The timber harvest was the largest in years, surpassing 1946 by 6 percent, and 1947 by about 1 percent.

Total Drain



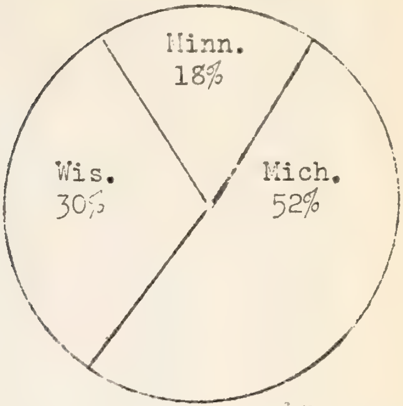
M Cubic feet	
Minnesota	184,590
Wisconsin	207,165
Michigan	283,115
Total	674,870

The total sawlog drain in the Lake States amounted to 1,458 million board feet during the year. The sawlog drain was about 2 percent less than 1947 but 7 percent more than 1946.

The cut from saw-timber trees, including low-grade cord-wood material, amounted to 359 million cubic feet, about 4½ million cords, or 53 percent of the total drain. With the passing of each decade it becomes more evident that a smaller proportion of the total cut in the Lake States comes from sawlog trees.

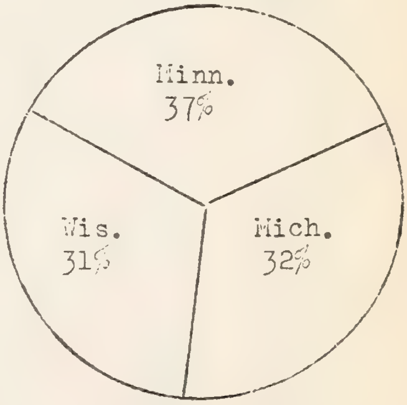
The cut from pole-sized trees amounted to 316 million cubic feet (4-1/3 million cords), representing 47 percent of the total drain. This trend is most pronounced in Minnesota where it is estimated that about 60 percent of the total drain in 1948 was comprised of material cut from trees of pole-timber size. The proportion was less in Wisconsin and Michigan, amounting to about 45 percent and 35 percent respectively.

Saw-timber Drain



	M bd.ft. Int'l. ¼" Rule
Minnesota	261,115
Wisconsin	438,000
Michigan	759,100
Total	1,458,215

Pole-timber Drain



	M Cubic feet
Minnesota	115,525
Wisconsin	98,120
Michigan	102,380
Total	316,025

Logs and bolts cut for lumber, boxboards, and railroad cross ties as a group ranked first as the largest single drain item. In 1948 these three closely related products made up 70 percent of the sawlog and 45 percent of the total cubic-foot drain. About 54 percent of the board-foot "lumber" drain was hardwoods, 36 percent softwoods, and 10 percent aspen.

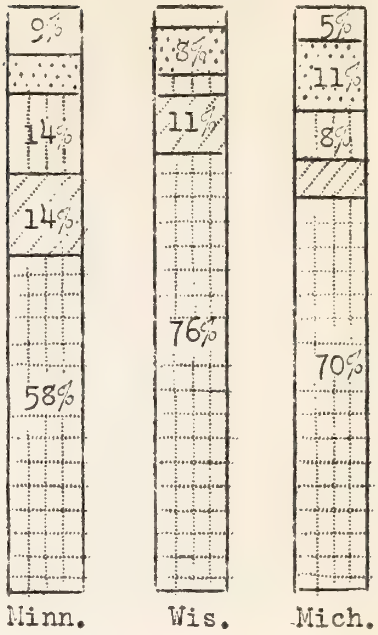
Pulpwood was second, accounting for nearly 170 million cubic feet or 25 percent of the total cubic-foot drain. Approximately two-thirds of the pulpwood drain in 1948 was in softwoods, and one-third in hardwoods. Use of hardwoods, particularly aspen, is on the increase and will be of more importance in the future.

Fuelwood, although two-thirds of it was nonmerchantable material, still ranked as the third largest drain item in the region, making up 9 percent of the sawlog and 18 percent of the total cubic-foot drain. Of the 124 million cubic feet of fuelwood drain, the volume was about equally divided between saw-timber and pole-timber trees. Hardwoods comprised about 65 percent, aspen 25 percent, and softwoods 10 percent of the fuelwood drain.

Of the other commodities, veneer logs and fence posts made up most of the remaining drain followed by mine materials, excelsior, chemical wood, poles, cooperage, and several other products.

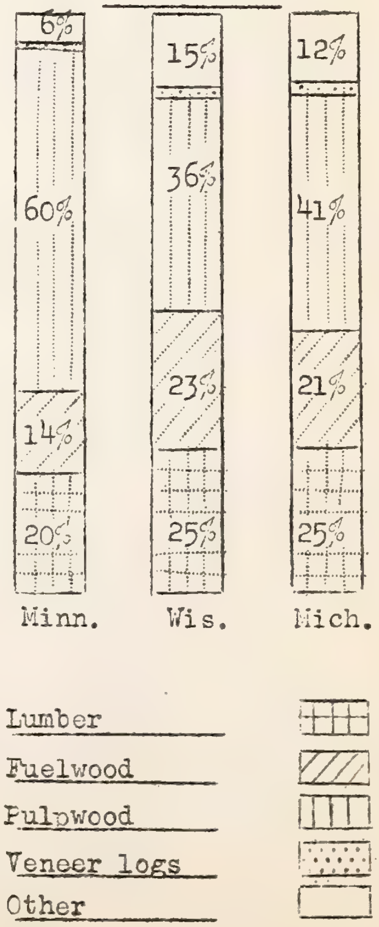
Drain by Commodities

Saw Timber



Drain by Commodities

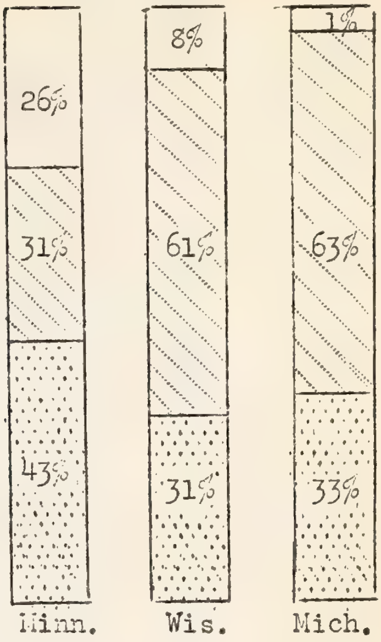
Pole Timber



Aspen, which accounted for about 22 percent of the total cubic-foot drain, was cut more heavily than any other species in the region. Maple, oak, and hemlock were next in order with 13, 12, and 9 percent respectively. However, in the board-foot saw-timber drain maple ranked first with approximately 302 million board feet, or 21 percent of the board-foot volume. Hemlock was second, accounting for 16 percent, oak third with 11 percent, and aspen fourth with 9 percent. In the pole-timber class, aspen was far out in front with nearly 110 million cubic feet (1½ million cords) representing 35 percent of the cut from pole-timber trees. Jack pine was second, accounting for 13 percent, oak and spruce tied for third with 10 percent each.

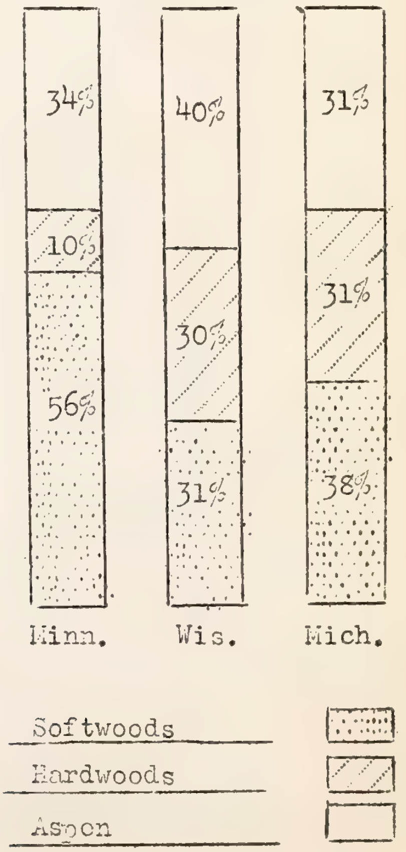
Drain by Species Groups

Saw Timber



Drain by Species Groups

Pole Timber



FOREST PRODUCTS HARVESTED IN THE LAKE STATES - 1948

Sawlogs, box bolts, and tie cuts

Logs and bolts for commercial veneer

Logs and bolts for container veneer

Pulpwood logs and bolts

Fuelwood

Chemical wood

Excelsior

Piling

Poles

Posts

Hewn ties

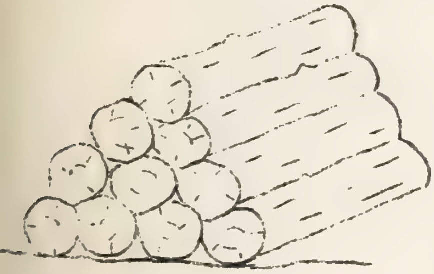
Mine timbers

Mine lagging

Other mine material

Cooperage

Miscellaneous



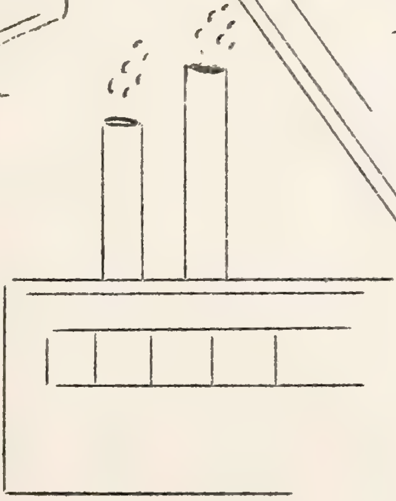


Table 1.- Sawlog and box-bolt production in the Lake States - 1948

Species and origin	Volume cut and destination			
	Total	Minn.	Wis.	Mich.
	M bd.ft., Int'l. ¼-inch			
White pine	72,355	15,215	33,890	23,250
Minn.	15,215	15,215	-	-
Wis.	33,575	-	33,370	205
Mich.	23,565	-	520	23,045
Red pine	67,040	29,410	26,970	10,660
Minn.	29,410	29,410	-	-
Wis.	26,875	-	26,835	40
Mich.	10,755	-	135	10,620
Jack pine	79,625	56,795	8,300	14,530
Minn.	56,795	56,795	-	-
Wis.	8,075	-	8,075	-
Mich.	14,755	-	225	14,530
Spruce	15,320	6,055	1,630	7,635
Minn.	6,055	6,055	-	-
Wis.	1,690	-	1,530	160
Mich.	7,575	-	100	7,475
Balsam	8,560	4,620	1,000	2,940
Minn.	4,620	4,620	-	-
Wis.	985	-	975	10
Mich.	2,955	-	25	2,930
Tamarack	4,460	2,685	1,355	420
Minn.	2,685	2,685	-	-
Wis.	1,355	-	1,355	-
Mich.	420	-	-	420
Cedar	11,240	1,220	2,345	7,675
Minn.	1,220	1,220	-	-
Wis.	2,280	-	2,275	5
Mich.	7,740	-	70	7,670
Hemlock	213,040	-	68,250	144,790
Minn.	-	-	-	-
Wis.	66,175	-	63,095	3,080
Mich.	146,865	-	5,155	141,710
Softwood total	471,640	116,000	143,740	211,900
Minn.	116,000	116,000	-	-
Wis.	141,010	-	137,510	3,500
Mich.	214,630	-	6,230	208,400
Maple	256,370	2,185	74,795	179,390
Minn.	2,185	2,185	-	-
Wis.	64,975	-	62,685	2,290
Mich.	189,210	-	12,110	177,100
Birch	78,995	3,100	23,560	52,335
Minn.	3,100	3,100	-	-
Wis.	19,595	-	16,470	3,125
Mich.	56,300	-	7,090	49,210
Basswood	51,655	10,870	21,940	18,845
Minn.	10,870	10,870	-	-
Wis.	21,390	-	21,210	180
Mich.	19,395	-	730	18,665
Elm	72,615	15,090	25,640	31,885
Minn.	15,090	15,090	-	-
Wis.	24,795	-	24,715	80
Mich.	32,730	-	925	31,805
Beech	26,020	-	1,110	24,910
Minn.	-	-	-	-
Wis.	890	-	890	-
Mich.	25,130	-	220	24,910
Oak	116,750	13,490	68,035	35,225
Minn.	13,490	13,490	-	-
Wis.	67,765	-	67,740	25
Mich.	35,495	-	295	35,200
Aspen	181,685	66,940	70,635	44,110
Minn.	66,070	66,070	-	-
Wis.	70,305	870	69,435	-
Mich.	45,310	-	1,200	44,110
Cottonwood	13,295	8,165	1,810	3,320
Minn.	8,165	8,165	-	-
Wis.	1,810	-	1,810	-
Mich.	3,320	-	-	3,320
Ash	21,670	4,190	9,195	8,285
Minn.	4,190	4,190	-	-
Wis.	9,055	-	8,905	150
Mich.	8,425	-	290	8,135
Hickory	890	-	130	760
Minn.	-	-	-	-
Wis.	130	-	130	-
Mich.	760	-	-	760
Cherry	1,145	20	75	1,050
Minn.	20	20	-	-
Wis.	75	-	75	-
Mich.	1,050	-	-	1,050
Walnut	340	25	40	275
Minn.	25	25	-	-
Wis.	40	-	40	-
Mich.	275	-	-	275
Misc.	4,185	275	1,355	2,555
Minn.	275	275	-	-
Wis.	1,355	-	1,355	-
Mich.	2,555	-	-	2,555
Hardwood total	825,615	124,350	298,320	402,945
Minn.	123,480	123,480	-	-
Wis.	282,180	870	275,460	5,850
Mich.	419,955	-	22,860	397,095
All species	1,297,255	240,350	442,060	614,845
Minn.	239,480	239,480	-	-
Wis.	423,190	870	412,970	9,350
Mich.	634,585	-	29,090	605,495

Table 2.- Production of Logs for Commercial Veneer Industry in the Lake States 1948

Species and origin	Volume cut and destination					Imports	
	Total	Minnesota	Wisconsin	Michigan	Other U.S.	Other U.S.	Foreign Canada
	M board feet, International ¼-inch rule						
White pine	240	-	240	-	-	10	10
Minnesota	-	-	-	-	-	-	-
Wisconsin	160	-	160	-	-	-	-
Michigan	80	-	80	-	-	10	10
Maple	34,000	-	18,130	15,720	150	130	550
Minnesota	660	-	660	-	-	-	-
Wisconsin	7,840	-	7,840	-	-	90	350
Michigan	25,500	-	9,630	15,720	150	40	200
Birch	21,980	260	15,950	5,770	-	-	9,270
Minnesota	230	230	-	-	-	-	-
Wisconsin	4,810	30	4,780	-	-	-	6,650
Michigan	16,940	-	11,170	5,770	-	-	2,620
Basswood	8,560	100	7,820	610	30	500	60
Minnesota	2,090	90	2,000	-	-	-	-
Wisconsin	3,470	10	3,460	-	-	360	50
Michigan	3,000	-	2,360	610	30	140	10
Elm	7,180	-	6,550	590	40	460	50
Minnesota	1,550	-	1,550	-	-	-	-
Wisconsin	3,200	-	3,200	-	-	350	50
Michigan	2,430	-	1,800	590	40	110	-
Beech	7,220	-	940	6,280	-	-	10
Minnesota	-	-	-	-	-	-	-
Wisconsin	70	-	70	-	-	-	10
Michigan	7,150	-	870	6,280	-	-	-
Oak	4,520	-	4,220	220	80	280	210
Minnesota	370	-	370	-	-	-	-
Wisconsin	3,420	-	3,350	70	-	90	120
Michigan	730	-	500	150	80	190	90
Aspen	170	50	80	40	-	-	-
Minnesota	-	-	-	-	-	-	-
Wisconsin	120	50	70	-	-	-	-
Michigan	50	-	10	40	-	-	-
Ash	1,340	-	1,260	80	-	10	10
Minnesota	80	-	80	-	-	-	-
Wisconsin	610	-	610	-	-	10	10
Michigan	650	-	570	80	-	-	-
Walnut	560	-	50	-	510	-	-
Minnesota	90	-	-	-	90	-	-
Wisconsin	310	-	50	-	260	-	-
Michigan	160	-	-	-	160	-	-
Other 1/	240	-	190	10	40	370	70
Minnesota	140	-	140	-	-	-	-
Wisconsin	40	-	40	-	-	160	70
Michigan	60	-	10	10	40	210	-
All species	86,010	410	55,430	29,320	850	1,760	10,240
Minnesota	5,210	320	4,800	-	90	-	-
Wisconsin	24,050	90	23,630	70	260	1,060	7,310
Michigan	56,750	-	27,000	29,250	500	700	2,930

1/ Cottonwood, hackberry, sycamore, cherry, and yellow-poplar.

Table 3.- Production of logs and bolts for container veneer industry, in the Lake States - 1948

Species and origin	Volume cut logs and bolts		Imports	
	Veneer logs	Heading stock	Other U. S.	Canada and foreign
	M bd.ft., Int'l. ¼-inch	Standard cords (rough)	M bd.ft. Int'l. ¼-inch	
White pine	10	-	-	-
Minnesota	10	-	-	-
Wisconsin	-	-	-	-
Michigan	-	-	-	-
Softwood total	10	-	-	-
Minnesota	10	-	-	-
Wisconsin	-	-	-	-
Michigan	-	-	-	-
Maple	8,780	2,050	-	-
Minnesota	120	-	-	-
Wisconsin	790	1,850	-	-
Michigan	7,870	200	-	-
Birch	2,320	440	-	-
Minnesota	40	-	-	-
Wisconsin	10	320	-	-
Michigan	2,270	120	-	-
Basswood	3,360	4,250	-	-
Minnesota	1,090	160	-	-
Wisconsin	1,230	4,030	-	-
Michigan	1,040	60	-	-
Elm	10,270	520	30	-
Minnesota	260	-	-	-
Wisconsin	4,870	330	-	-
Michigan	5,140	190	30	-
Beech	3,390	180	10	-
Minnesota	-	-	-	-
Wisconsin	-	-	-	-
Michigan	3,390	180	10	-
Oak	530	-	-	-
Minnesota	-	-	-	-
Wisconsin	260	-	-	-
Michigan	270	-	-	-
Aspen	860	8,120	-	-
Minnesota	250	100	-	-
Wisconsin	570	8,020	-	-
Michigan	40	-	-	-
Other 1/	1,320	650	10	-
Minnesota	130	30	-	-
Wisconsin	260	470	-	-
Michigan	930	150	10	-
Hardwood total	30,830	16,210	50	-
Minnesota	1,890	290	-	-
Wisconsin	7,990	15,020	-	-
Michigan	20,950	900	50	-
All species	30,840	16,210	50	-
Minnesota	1,900	290	-	-
Wisconsin	7,990	15,020	-	-
Michigan	20,950	900	50	-

1/ Cottonwood, ash, yellow poplar, sycamore.

Table 4.- Pulpwood production and imports in the Lake States - 1948

Species and origin	Volume cut and destination					Imports	
	Total	Minnesota	Wisconsin	Michigan	Other U. S.	Other U. S.	Canada and foreign
			M standard cords - unpeeled				
Pine	493	143	263	87	-	29	104
Minnesota	287	143	122	22	-	-	44
Wisconsin	117	-	117	-	-	28	15
Michigan	89	-	24	65	-	1	45
Spruce	436	143	242	39	12	7	560
Minnesota	268	143	113	-	12	-	51
Wisconsin	34	-	34	-	-	7	415
Michigan	134	-	95	39	-	-	94
Balsam	400	76	269	54	1	-	32
Minnesota	150	76	73	-	1	-	1
Wisconsin	87	-	87	-	-	-	9
Michigan	163	-	109	54	-	-	22
Tamarack	9	3	5	1	-	-	-
Minnesota	4	3	1	-	-	-	-
Wisconsin	3	-	3	-	-	-	-
Michigan	2	-	1	1	-	-	-
Hemlock	183	-	137	46	-	-	-
Minnesota	-	-	-	-	-	-	-
Wisconsin	51	-	51	-	-	-	-
Michigan	132	-	86	46	-	-	-
Softwood total	1,521	365	916	227	13	36	696
Minnesota	709	365	309	22	13	-	96
Wisconsin	292	-	292	-	-	35	439
Michigan	520	-	315	205	-	1	161
Birch	17	-	17	-	-	-	-
Minnesota	2	-	2	-	-	-	-
Wisconsin	8	-	8	-	-	-	-
Michigan	7	-	7	-	-	-	-
Aspen	625	249	314	47	15	-	64
Minnesota	276	249	27	-	-	-	15
Wisconsin	167	-	167	-	-	-	18
Michigan	182	-	120	47	15	-	31
Misc. hdwds.	19	-	-	19	-	-	-
Minnesota	-	-	-	-	-	-	-
Wisconsin	-	-	-	-	-	-	-
Michigan	19	-	-	19	-	-	-
Hardwood total	661	249	331	66	15	-	64
Minnesota	278	249	29	-	-	-	15
Wisconsin	175	-	175	-	-	-	18
Michigan	208	-	127	66	15	-	31
Slabs, etc.	2	-	1	1	-	-	-
Minnesota	-	-	-	-	-	-	-
Wisconsin	1	-	1	-	-	-	-
Michigan	1	-	-	1	-	-	-
All species	2,184	614	1,248	294	28	36	760
Minnesota	987	614	338	22	13	-	111
Wisconsin	468	-	468	-	-	35	457
Michigan	729	-	442	272	15	1	192

Table 5.- Production of miscellaneous cordwood in the Lake States - 1948

Species and origin	Volume cut by states			Species and origin	Volume cut by states		
	Fuelwood 1/	Chemical wood	Excelsior		Fuelwood 1/	Chemical wood	Excelsior
	M standard cords				M standard cords		
White pine	170	-	-	Birch	330	19	-
Minnesota	20	-	-	Minnesota	90	-	-
Wisconsin	100	-	-	Wisconsin	130	-	-
Michigan	50	-	-	Michigan	110	19	-
Red pine	30	-	-	Basswood	160	-	1
Minnesota	10	-	-	Minnesota	80	-	-
Wisconsin	10	-	-	Wisconsin	40	-	1
Michigan	10	-	-	Michigan	40	-	-
Jack pine	155	-	-	Elm	440	1	-
Minnesota	70	-	-	Minnesota	140	-	-
Wisconsin	80	-	-	Wisconsin	100	-	-
Michigan	5	-	-	Michigan	200	1	-
Spruce	45	-	-	Beech	45	6	-
Minnesota	30	-	-	Minnesota	-	-	-
Wisconsin	5	-	-	Wisconsin	5	-	-
Michigan	10	-	-	Michigan	40	6	-
Balsam	50	-	-	Oak	1,190	1	-
Minnesota	40	-	-	Minnesota	240	-	-
Wisconsin	5	-	-	Wisconsin	590	-	-
Michigan	5	-	-	Michigan	360	1	-
Tamarack	290	-	-	Aspen	860	4	83
Minnesota	220	-	-	Minnesota	380	-	-
Wisconsin	60	-	-	Wisconsin	240	4	41
Michigan	10	-	-	Michigan	240	-	42
Cedar	60	-	-	Miscellaneous	295	1	-
Minnesota	10	-	-	Minnesota	150	-	-
Wisconsin	40	-	-	Wisconsin	75	-	-
Michigan	10	-	-	Michigan	70	1	-
Hemlock	300	-	-	Hardwood total	3,900	67	84
Minnesota	-	-	-	Minnesota	1,100	-	-
Wisconsin	200	-	-	Wisconsin	1,400	4	42
Michigan	100	-	-	Michigan	1,400	63	42
Softwood total	1,100	-	-	Slabs, etc.	670	22	-
Minnesota	400	-	-	Minnesota	120	-	-
Wisconsin	500	-	-	Wisconsin	250	3	-
Michigan	200	-	-	Michigan	300	19	-
Maple	580	35	-	All species	5,670	89	84
Minnesota	20	-	-	Minnesota	1,620	-	-
Wisconsin	220	-	-	Wisconsin	2,150	7	42
Michigan	340	35	-	Michigan	1,900	82	42

1/ Five year average 1945-49.

Table 6.- Production of miscellaneous piece products in the Lake States - 1948

Species and origin	Piling	Utility poles	Fence posts	Hewn ties
	Thousand pieces			
hite pine	.1	-	-	-
Minnesota	-	-	-	-
Wisconsin	.1	-	-	-
Michigan	-	-	-	-
ed pine	3	5	200	-
Minnesota	2.5	5	100	-
Wisconsin	.5	-	100	-
Michigan	-	-	-	-
ack pine	1	21	550	-
Minnesota	1	20	300	-
Wisconsin	-	1	150	-
Michigan	-	-	100	-
pruce	-	-	-	1
Minnesota	-	-	-	-
Wisconsin	-	-	-	-
Michigan	-	-	-	1
alsam	-	-	250	-
Minnesota	-	-	200	-
Wisconsin	-	-	50	-
Michigan	-	-	-	-
amarack	-	-	750	1
Minnesota	-	-	300	1
Wisconsin	-	-	300	-
Michigan	-	-	150	-
edar	-	190	7,400	15
Minnesota	-	115	1,000	2
Wisconsin	-	15	1,400	-
Michigan	-	60	5,000	13
emlock	-	-	150	2
Minnesota	-	-	-	-
Wisconsin	-	-	100	-
Michigan	-	-	50	2
oftwood total	4.1	216	9,300	19
Minnesota	3.5	140	1,900	3
Wisconsin	.6	16	2,100	-
Michigan	-	60	5,300	16
Maple	.6	-	400	-
Minnesota	-	-	200	-
Wisconsin	.6	-	100	-
Michigan	-	-	100	-
Birch	-	-	250	-
Minnesota	-	-	50	-
Wisconsin	-	-	100	-
Michigan	-	-	100	-
Elm	4.5	-	450	-
Minnesota	-	-	50	-
Wisconsin	4.5	-	200	-
Michigan	-	-	200	-
Oak	1	-	14,600	-
Minnesota	-	-	3,000	-
Wisconsin	1	-	7,800	-
Michigan	-	-	3,800	-
Aspen	-	-	1,400	-
Minnesota	-	-	700	-
Wisconsin	-	-	400	-
Michigan	-	-	300	-
Ash	.2	-	-	-
Minnesota	-	-	-	-
Wisconsin	.2	-	-	-
Michigan	-	-	-	-
Miscellaneous	[1] .2	-	600	-
Minnesota	-	-	100	-
Wisconsin	.2	-	300	-
Michigan	-	-	200	-
Hardwood total	6.5	-	17,700	-
Minnesota	-	-	4,100	-
Wisconsin	6.5	-	8,900	-
Michigan	-	-	4,700	-
All species	10.6	216	27,000	19
Minnesota	3.5	140	6,000	3
Wisconsin	7.1	16	11,000	-
Michigan	-	60	10,000	16

[1] Hickory

Table 7.- Production of mining materials in the Lake States - 1948

Volume of Logs and Bolts Cut by States

Species and origin	Total	Mine timbers	Mine lagging	Other 1/	Species and origin	Total	Mine timbers	Mine lagging	Other 1/
	Thousand cubic feet					Thousand cubic feet			
White pine	25	20	-	5	Maple	1,435	1,090	-	345
Minnesota	20	20	-	-	Minnesota	20	20	-	-
Wisconsin	-	-	-	-	Wisconsin	70	50	-	20
Michigan	5	-	-	5	Michigan	1,345	1,020	-	325
Red pine	85	80	-	5	Birch	450	385	-	65
Minnesota	85	80	-	5	Minnesota	10	10	-	-
Wisconsin	-	-	-	-	Wisconsin	45	30	-	15
Michigan	-	-	-	-	Michigan	395	345	-	50
Jack pine	1,150	830	180	140	Elm	125	110	-	15
Minnesota	1,150	830	180	140	Minnesota	40	40	-	-
Wisconsin	-	-	-	-	Wisconsin	15	10	-	5
Michigan	-	-	-	-	Michigan	70	60	-	10
Spruce	5	-	-	5	Beech	80	75	-	5
Minnesota	-	-	-	-	Minnesota	-	-	-	-
Wisconsin	-	-	-	-	Wisconsin	-	-	-	-
Michigan	5	-	-	5	Michigan	80	75	-	5
Tamarack	2,075	375	220	1,480	Oak	25	20	-	5
Minnesota	1,045	320	-	725	Minnesota	-	-	-	-
Wisconsin	140	10	5	125	Wisconsin	15	10	-	5
Michigan	890	45	215	630	Michigan	10	10	-	-
Cedar	1,765	-	1,755	10	Ash	70	70	-	-
Minnesota	330	-	330	-	Minnesota	70	70	-	-
Wisconsin	90	-	90	-	Wisconsin	-	-	-	-
Michigan	1,345	-	1,335	10	Michigan	-	-	-	-
Hemlock	330	300	5	25	Hdwd. total	2,185	1,750	-	435
Minnesota	-	-	-	-	Minnesota	140	140	-	-
Wisconsin	15	10	-	5	Wisconsin	145	100	-	45
Michigan	315	290	5	20	Michigan	1,900	1,510	-	390
Sftwd. total	5,435	1,605	2,160	1,670	All species	7,620	3,355	2,160	2,105
Minnesota	2,630	1,250	510	870	Minnesota	2,770	1,390	510	870
Wisconsin	245	20	95	130	Wisconsin	390	120	95	175
Michigan	2,560	335	1,555	670	Michigan	4,460	1,845	1,555	1,060

1/ Mine cribbing poles, trestle logs, hewed shaft timbers, smelter brands, and etc.

Table 8.- Production of cooperage logs and bolts in the Lake States - 1948

Species	Total	Volume cut by states		
		Minnesota	Wisconsin	Michigan
		M bd.ft., Int'l. ¼-inch rule		
Maple	50	50	-	-
Basswood	270	100	170	-
Elm	900	900	-	-
Oak	1,260	550	710	-
Aspen	50	50	-	-
Cottonwood	400	400	-	-
Ash	50	50	-	-
All species	2,980	2,100	880	-

Table 9.- Production of miscellaneous products[1] in the Lake States - 1948
(Five year average 1945-49)

Species	Total	Volume cut by states		
		Minnesota	Wisconsin	Michigan
		Thousand cubic feet		
White pine	180	60	60	60
Red pine	90	40	20	30
Jack pine	210	90	40	80
Spruce	50	20	10	20
Balsam	140	50	20	70
Tamarack	50	20	10	20
Cedar	690	90	160	440
Hemlock	40	-	20	20
Softwood total	1,450	370	340	740
Maple	410	-	90	320
Birch	230	190	30	10
Basswood	170	80	70	20
Elm	80	-	-	80
Beech	670	-	-	670
Oak	100	10	10	80
Aspen	1,520	960	380	180
Ash	10	-	-	10
Other	70	-	20	50
Hardwood total	3,260	1,240	600	1,420
All species	4,710	1,610	940	2,160

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[1] Rough forest products used for manufacture of matches, clothespins, bowling pins, handles, wooden ware, rustic furniture, toys, shingles, lath, log cabin materials, etc.

CUTTING DRAIN ON PRIMARY GROWING STOCK - 1948

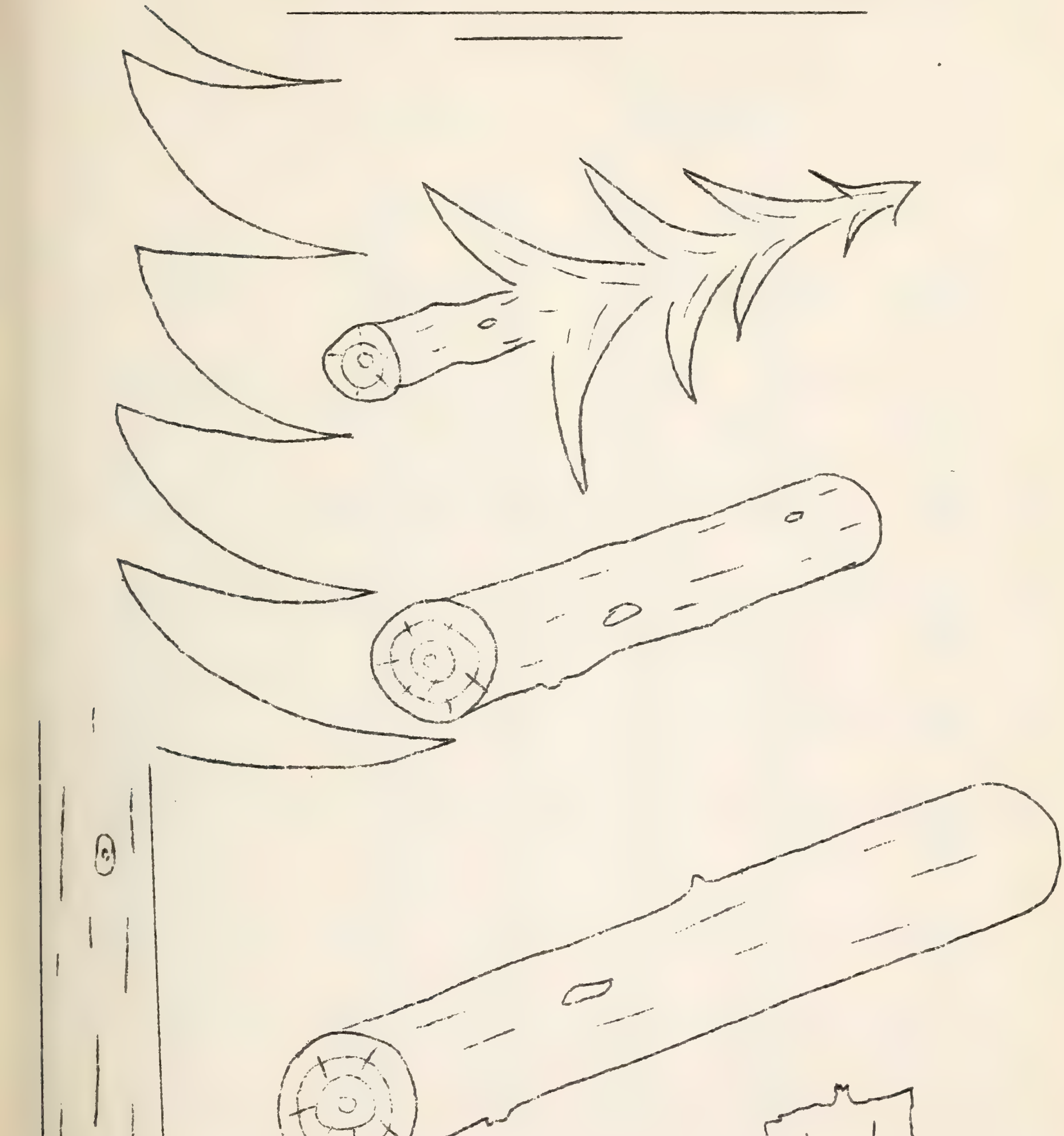

Table 10.--Sawlogs and box-bolt timber drain in the Lake States--1948

Species and origin	Net timber drain, by size class				
	Total		Saw-timber trees		Pole-timber trees
	M bd.ft.	M cu.ft.	M bd.ft.	M cu.ft.	M cu. ft.
White pine	58,710	15,950	58,710	12,100	3,850
Minnesota....	9,070	3,460	9,070	1,870	1,590
Wisconsin....	29,170	7,390	29,170	6,010	1,380
Michigan.....	20,470	5,100	20,470	4,220	880
Red pine.......	50,200	14,910	50,200	10,340	4,570
Minnesota....	17,520	6,680	17,520	3,610	3,070
Wisconsin....	23,340	5,910	23,340	4,810	1,100
Michigan.....	9,340	2,320	9,340	1,920	400
Jack pine......	53,670	17,850	53,670	11,050	6,800
Minnesota....	33,840	12,890	33,840	6,970	5,920
Wisconsin....	7,010	1,770	7,010	1,440	330
Michigan.....	12,820	3,190	12,820	2,640	550
Spruce..........	11,660	3,390	11,660	2,400	990
Minnesota....	3,610	1,370	3,610	740	630
Wisconsin....	1,470	370	1,470	300	70
Michigan.....	6,580	1,650	6,580	1,360	290
Balsam.........	6,180	1,910	6,180	1,280	630
Minnesota....	2,750	1,050	2,750	570	480
Wisconsin....	860	220	860	180	40
Michigan.....	2,570	640	2,570	530	110
Tamarack.......	3,150	1,000	3,150	650	350
Minnesota....	1,600	610	1,600	330	280
Wisconsin....	1,180	290	1,180	240	50
Michigan.....	370	100	370	80	20
Cedar..........	9,430	2,450	9,430	1,940	510
Minnesota....	730	280	730	150	130
Wisconsin....	1,980	500	1,980	410	90
Michigan.....	6,720	1,670	6,720	1,380	290
Hemlock........	185,080	46,350	185,080	38,120	8,230
Minnesota....	...	...	...	...	...
Wisconsin....	57,490	14,560	57,490	11,840	2,720
Michigan.....	127,590	31,790	127,590	26,280	5,510
Softwood total	378,080	103,810	378,080	77,880	25,930
Minnesota....	69,120	26,340	69,120	14,240	12,100
Wisconsin....	122,500	31,010	122,500	25,230	5,780
Michigan.....	186,460	46,460	186,460	38,410	8,050

Table 10.--Sawlogs and box-bolt timber drain in the Lake States--1948
(continued)

Species and origin	Net timber drain, by size class				
	Total		Saw-timber trees		Pole-timber trees
	M bd. ft.	M cu. ft.	M bd. ft.	M cu. ft.	M cu.ft.
Maple..........	221,950	60,510	221,950	53,420	7,090
Minnesota....	1,640	520	1,640	390	130
Wisconsin....	56,320	15,180	56,320	13,400	1,780
Michigan.....	163,990	44,810	163,990	39,630	5,180
Birch..........	68,110	18,470	68,110	16,200	2,270
Minnesota....	2,320	740	2,320	550	190
Wisconsin....	16,990	4,580	16,990	4,040	540
Michigan.....	48,800	13,150	48,800	11,610	1,540
Basswood.......	43,480	12,130	43,480	10,340	1,790
Minnesota....	8,130	2,600	8,130	1,930	670
Wisconsin....	18,540	5,000	18,540	4,410	590
Michigan.....	16,810	4,530	16,810	4,000	530
Elm............	61,150	17,050	61,150	14,550	2,500
Minnesota....	11,290	3,610	11,290	2,690	920
Wisconsin....	21,490	5,790	21,490	5,110	680
Michigan.....	28,370	7,650	28,370	6,750	900
Beech..........	22,560	6,080	22,560	5,370	710
Minnesota....	...	...	...	...	...
Wisconsin....	780	210	780	190	20
Michigan.....	21,780	5,870	21,780	5,180	690
Oak............	99,590	27,350	99,590	23,700	3,650
Minnesota....	10,090	3,220	10,090	2,400	820
Wisconsin....	58,730	15,840	58,730	13,980	1,860
Michigan.....	30,770	8,290	30,770	7,320	970
Aspen..........	88,890	50,260	88,890	22,080	28,180
Minnesota....	39,330	17,840	39,330	9,830	8,010
Wisconsin....	27,450	19,980	27,450	6,860	13,120
Michigan.....	22,110	12,440	22,110	5,390	7,050
Cottonwood.....	10,560	3,150	10,560	2,510	640
Minnesota....	6,110	1,950	6,110	1,450	500
Wisconsin....	1,570	420	1,570	370	50
Michigan.....	2,880	780	2,880	690	90
Miscellaneous..	23,950	6,630	23,950	5,710	920
Minnesota....	3,390	1,080	3,390	800	280
Wisconsin....	9,250	2,500	9,250	2,210	290
Michigan.....	11,310	3,050	11,310	2,700	350
Hardwood total.	640,240	201,630	640,240	153,880	47,750
Minnesota....	82,300	31,560	82,300	20,040	11,520
Wisconsin....	211,120	69,500	211,120	50,570	18,930
Michigan.....	346,820	100,570	346,820	83,270	17,300
All species....	1,018,320	305,440	1,018,320	231,760	73,680
Minnesota....	151,420	57,900	151,420	34,280	23,620
Wisconsin....	333,620	100,510	333,620	75,800	24,710
Michigan.....	533,280	147,030	533,280	121,680	25,350

NOTE - Miscellaneous species:	Ash	Cherry	Hickory	Walnut	Other
Minnesota (percent)	93	1	..	1	5
Wisconsin (percent)	85	1	1	1	12
Michigan (percent)	65	8	6	2	19

Table 11.--Veneer log (commercial) timber drain in the Lake States--1948

Species and origin	Net timber drain, by size class: Total		Saw-timber trees		Pole-timber trees	Species and origin	Net timber drain, by size class: Total		Saw-timber trees		Pole-timber trees
	M bd.ft.	M cu.ft.	M bd.ft.	M cu.ft.	M cu.ft.		M bd.ft.	M cu.ft.	M bd.ft.	M cu.ft.	M cu.ft.
White pine....	240	50	240	50	..	Oak...........	4,690	880	4,690	860	20
Minnesota...	..	..	..	..	..	Minnesota...	380	70	380	70	..
Wisconsin...	160	30	160	30	..	Wisconsin...	3,530	660	3,530	640	20
Michigan....	80	20	80	20	..	Michigan....	780	150	780	150	..
Softwood total	240	50	240	50	..	Aspen.........	140	40	140	30	10
Minnesota...	..	..	..	..	..	Minnesota...	..	..	..	..	..
Wisconsin...	160	30	160	30	..	Wisconsin...	90	30	90	20	10
Michigan....	80	20	80	20	..	Michigan....	50	10	50	10	..
Maple.........	35,880	6,880	35,880	6,830	50	Cottonwood....	150	30	150	30	..
Minnesota...	670	140	670	130	10	Minnesota...	150	30	150	30	..
Wisconsin...	8,100	1,510	8,100	1,470	40	Wisconsin...	..	..	..	..	..
Michigan....	27,110	5,230	27,110	5,230	..	Michigan....	..	..	..	..	..
Birch.........	23,200	4,450	23,200	4,430	20	Miscellaneous	2,160	400	2,160	400	..
Minnesota...	230	50	230	50	..	Minnesota...	170	40	170	40	..
Wisconsin...	4,960	920	4,960	900	20	Wisconsin...	1,070	190	1,070	190	..
Michigan....	18,010	3,480	18,010	3,480	..	Michigan....	920	170	920	170	..
Basswood......	8,910	1,720	8,910	1,680	40	Hardwood total	90,200	17,300	90,200	17,130	170
Minnesota...	2,140	430	2,140	410	20	Minnesota...	5,320	1,070	5,320	1,030	40
Wisconsin...	3,580	670	3,580	650	20	Wisconsin...	24,640	4,600	24,640	4,470	130
Michigan....	3,190	620	3,190	620	..	Michigan....	60,240	11,630	60,240	11,630	..
Elm...........	7,470	1,430	7,470	1,400	30	All species...	90,440	17,350	90,440	17,180	170
Minnesota...	1,580	310	1,580	300	10	Minnesota...	5,320	1,070	5,320	1,030	40
Wisconsin...	3,310	620	3,310	600	20	Wisconsin...	24,800	4,630	24,800	4,500	130
Michigan....	2,580	500	2,580	500	..	Michigan....	60,320	11,650	60,320	11,650	..
Beech.........	7,600	1,470	7,600	1,470	..						
Minnesota...	..	..	..	..	..						
Wisconsin...	..	..	..	..	..						
Michigan....	7,600	1,470	7,600	1,470	..						

NOTE - Miscellaneous species:	Ash	Walnut	Other
Minnesota (percent)	50	50	..
Wisconsin (percent)	60	30	10
Michigan (percent)	75	20	5

Table 12.--Veneer logs and bolts (container) timber drain in the Lake States--1948

Species and origin	Net timber drain, by size class					Species and origin	Net timber drain, by size class				
	Total		Saw-timber trees		Pole-timber trees		Total		Saw-timber trees		Pole-timber trees
	M bd.ft.	M cu.ft.	M bd.ft.	M cu.ft.	M cu.ft.		M bd.ft.	M cu.ft.	M bd.ft.	M cu.ft.	M cu.ft.
White pine....	10	..	10	..	..	Oak............	510	120	510	110	10
Minnesota...	10	..	10	..	..	Minnesota...	..	..	..	..	..
Wisconsin...	..	..	..	..	..	Wisconsin...	230	60	230	50	10
Michigan....	..	..	..	..	..	Michigan....	280	60	280	60	..
Softwood total	10	..	10	..	..	Aspen.........	950	1,005	950	210	795
Minnesota...	10	..	10	..	..	Minnesota...	240	75	240	60	15
Wisconsin...	..	..	..	..	..	Wisconsin...	670	920	670	140	780
Michigan....	..	..	..	..	..	Michigan....	40	10	40	10	..
Maple.........	9,840	2,175	9,840	2,080	95	Cottonwood....	210	55	210	50	5
Minnesota...	110	25	110	20	5	Minnesota...	130	35	130	30	5
Wisconsin...	1,360	360	1,360	290	70	Wisconsin...	50	10	50	10	..
Michigan....	8,370	1,790	8,370	1,770	20	Michigan....	30	10	30	10	..
Birch.........	2,600	575	2,600	550	25	Miscellaneous	1,360	300	1,360	280	20
Minnesota...	40	15	40	10	5	Minnesota...	..	..	..	..	..
Wisconsin...	120	40	120	30	10	Wisconsin...	350	90	350	70	20
Michigan....	2,440	520	2,440	510	10	Michigan....	1,010	210	1,010	210	..
Basswood......	4,680	1,160	4,680	990	170	Hardwood total	33,990	8,570	33,990	7,200	1,370
Minnesota...	1,030	260	1,030	210	50	Minnesota...	1,790	470	1,790	380	90
Wisconsin...	2,530	660	2,530	540	120	Wisconsin...	9,770	3,310	9,770	2,080	1,230
Michigan....	1,120	240	1,120	240	..	Michigan....	22,430	4,790	22,430	4,740	50
Elm...........	10,190	2,400	10,190	2,160	240	All species...	34,000	8,570	34,000	7,200	1,370
Minnesota...	240	60	240	50	10	Minnesota...	1,800	470	1,800	380	90
Wisconsin...	4,460	1,170	4,460	950	220	Wisconsin...	9,770	3,310	9,770	2,080	1,230
Michigan....	5,490	1,170	5,490	1,160	10	Michigan....	22,430	4,790	22,430	4,740	50
Beech.........	3,650	780	3,650	770	10						
Minnesota...	..	..	..	..	..						
Wisconsin...	..	..	..	..	..						
Michigan....	3,650	780	3,650	770	10						

NOTE - Miscellaneous species:	Ash	Sycamore	Yellow-poplar
Wisconsin (percent)	100	..	..
Michigan (percent)	30	30	40

Table 13.--Pulpwood timber drain in the Lake States--1948

Species and origin	Net timber drain, by size class: Total		Saw-timber trees		Pole-timber trees
	M bd.ft.	M cu.ft.	M bd.ft.	M cu.ft.	M cu.ft.
Jack pine.....	13,550	36,590	13,550	2,590	34,000
Minnesota...	8,500	21,460	8,500	1,630	19,830
Wisconsin...	2,840	9,240	2,840	550	8,690
Michigan....	2,210	5,890	2,210	410	5,480
Spruce........	12,140	31,720	12,140	2,310	29,410
Minnesota...	7,990	20,170	7,990	1,530	18,640
Wisconsin...	830	2,690	830	160	2,530
Michigan....	3,320	8,860	3,320	620	8,240
Balsam........	10,640	28,960	10,640	2,020	26,940
Minnesota...	4,460	11,250	4,460	850	10,400
Wisconsin...	2,120	6,880	2,120	410	6,470
Michigan....	4,060	10,830	4,060	760	10,070
Tamarack......	270	730	270	50	680
Minnesota...	150	370	150	30	340
Wisconsin...	60	210	60	10	200
Michigan....	60	150	60	10	140
Hemlock.......	44,820	14,040	44,820	8,640	5,400
Minnesota...	..	..	..	..	..
Wisconsin...	1,100	3,950	1,100	210	3,740
Michigan....	43,720	10,090	43,720	8,430	1,660
Softwood total	81,420	112,040	81,420	15,610	96,430
Minnesota...	21,100	53,250	21,100	4,040	49,210
Wisconsin....	6,950	22,970	6,950	1,340	21,630
Michigan....	53,370	35,820	53,370	10,230	25,590
Maple.........	220	190	220	50	140
Minnesota...	..	..	..	..	..
Wisconsin...	..	..	..	..	..
Michigan....	220	190	220	50	140
Birch.........	1,020	1,460	1,020	240	1,220
Minnesota...	90	130	90	20	110
Wisconsin...	240	740	240	60	680
Michigan....	690	590	690	160	430
Basswood......	220	190	220	50	140
Minnesota...	..	..	..	..	..
Wisconsin...	..	..	..	..	..
Michigan....	220	190	220	50	140
Elm...........	560	480	560	130	350
Minnesota...	..	..	..	..	..
Wisconsin...	..	..	..	..	..
Michigan....	560	480	560	130	350
Beech.........	70	60	70	20	40
Minnesota...	..	..	..	..	..
Wisconsin...	..	..	..	..	..
Michigan....	70	60	70	20	40
Oak...........	820	690	820	190	500
Minnesota...	..	..	..	..	..
Wisconsin...	..	..	..	..	..
Michigan....	820	690	820	190	500
Aspen.........	20,250	52,930	20,250	4,860	48,120
Minnesota...	14,280	23,380	14,280	3,440	19,940
Wisconsin...	3,460	14,170	3,460	820	13,350
Michigan....	2,510	15,430	2,510	600	14,830
Hardwood total	23,160	56,050	23,160	5,540	50,510
Minnesota...	14,370	23,510	14,370	3,460	20,050
Wisconsin...	3,700	14,910	3,700	880	14,030
Michigan....	5,090	17,630	5,090	1,200	16,430
All species...	104,580	168,090	104,580	21,150	146,940
Minnesota...	35,470	76,760	35,470	7,500	69,260
Wisconsin...	10,650	37,880	10,650	2,220	35,660
Michigan....	58,460	53,450	58,460	11,430	42,020

Table 14.--Fuelwood timber drain in the Lake States (5-year average 1945-49)

Species and origin	Net timber drain, by size class				
	Total		Saw-timber trees		Pole-timber trees
	M bd.ft.	M cu.ft.	M bd.ft.	M cu. ft.	M cu.ft.
White pine......	930	1,540	930	750	790
Minnesota....	110	210	110	120	90
Wisconsin....	450	870	450	390	480
Michigan.....	370	460	370	240	220
Red pine........	170	280	170	150	130
Minnesota....	60	100	60	60	40
Wisconsin....	40	90	40	40	50
Michigan.....	70	90	70	50	40
Jack pine.......	800	1,460	800	750	710
Minnesota....	400	720	400	420	300
Wisconsin....	360	700	360	310	390
Michigan.....	40	40	40	20	20
Spruce..........	260	440	260	250	190
Minnesota....	170	310	170	180	130
Wisconsin....	20	40	20	20	20
Michigan.....	70	90	70	50	40
Balsam..........	290	490	290	280	210
Minnesota....	230	410	230	240	170
Wisconsin....	20	40	20	20	20
Michigan.....	40	40	40	20	20
Tamarack........	1,580	2,950	1,580	1,670	1,280
Minnesota....	1,240	2,330	1,240	1,380	950
Wisconsin....	270	530	270	240	290
Michigan.....	70	90	70	50	40
Cedar...........	310	540	310	270	270
Minnesota....	60	100	60	60	40
Wisconsin....	180	350	180	160	190
Michigan.....	70	90	70	50	40
Hemlock.........	1,640	2,680	1,640	1,260	1,420
Minnesota....	...	...	...	...	...
Wisconsin....	900	1,750	900	780	970
Michigan.....	740	930	740	480	450
Softwood total..	5,980	10,380	5,980	5,380	5,000
Minnesota....	2,270	4,180	2,270	2,460	1,720
Wisconsin....	2,240	4,370	2,240	1,960	2,410
Michigan.....	1,470	1,830	1,470	960	870

Table 14.--Fuelwood timber drain in the Lake States (5-year average 1945-49)
(Continued)

Species and origin	Net timber drain, by size class				
	Total		Saw-timber trees		Pole-timber trees
	M bd.ft.	M cu.ft.	M bd.ft.	M cu.ft.	M cu.ft.
Maple...........	19,960	16,150	19,960	9,150	7,000
Minnesota....	700	460	700	330	130
Wisconsin....	7,850	5,870	7,850	3,390	2,480
Michigan.....	11,410	9,820	11,410	5,430	4,390
Birch...........	11,950	8,770	11,950	5,270	3,500
Minnesota....	3,660	2,120	3,660	1,510	610
Wisconsin....	4,600	3,470	4,600	2,000	1,470
Michigan.....	3,690	3,180	3,690	1,760	1,420
Basswood........	5,570	4,100	5,570	2,600	1,500
Minnesota....	2,800	1,870	2,800	1,340	530
Wisconsin....	1,430	1,070	1,430	620	450
Michigan.....	1,340	1,160	1,340	640	520
Elm.............	15,180	11,720	15,180	7,070	4,650
Minnesota....	4,900	3,280	4,900	2,340	940
Wisconsin....	3,570	2,670	3,570	1,540	1,130
Michigan.....	6,710	5,770	6,710	3,190	2,580
Beech............	1,520	1,300	1,520	720	580
Minnesota....	...	...	...	...	...
Wisconsin....	180	140	180	80	60
Michigan.....	1,340	1,160	1,340	640	520
Oak.............	41,540	31,720	41,540	18,840	12,880
Minnesota....	8,400	5,600	8,400	4,000	1,600
Wisconsin....	21,060	15,730	21,060	9,090	6,640
Michigan.....	12,080	10,390	12,080	5,750	4,640
Aspen...........	19,260	32,240	19,260	8,860	23,380
Minnesota....	9,450	14,780	9,450	4,750	10,030
Wisconsin....	3,020	8,680	3,020	1,350	7,330
Michigan.....	6,790	8,780	6,790	2,760	6,020
Miscellaneous...	10,280	7,550	10,280	4,790	2,760
Minnesota....	5,250	3,520	5,250	2,510	1,010
Wisconsin....	2,680	2,010	2,680	1,160	850
Michigan.....	2,350	2,020	2,350	1,120	900
Hardwood total..	125,260	113,550	125,260	57,300	56,250
Minnesota....	35,160	31,630	35,160	16,780	14,850
Wisconsin....	44,390	39,640	44,390	19,230	20,410
Michigan.....	45,710	42,280	45,710	21,290	20,990
All species.....	131,240	123,930	131,240	62,680	61,250
Minnesota....	37,430	35,810	37,430	19,240	16,570
Wisconsin....	46,630	44,010	46,630	21,190	22,820
Michigan.....	47,180	44,110	47,180	22,250	21,860

Table 15.--Piling timber drain in the Lake States--1948

Species and origin	Net timber drain, by size class				
	Total		Saw-timber trees		Pole-timber trees
	M bd.ft.	M cu.ft.	M bd.ft.	M cu.ft.	M cu. ft.
White pine......	10	..	10	..	..
Minnesota...	..	..	..	..	..
Wisconsin...	10	..	10	..	..
Michigan....	..	..	..	..	..
Red pine........	425	85	425	85	..
Minnesota...	340	70	340	70	..
Wisconsin...	85	15	85	15	..
Michigan....	..	..	..	..	..
Jack pine.......	80	15	80	15	..
Minnesota...	80	15	80	15	..
Wisconsin...	..	..	..	..	..
Michigan....	..	..	..	..	..
Softwood total..	515	100	515	100	..
Minnesota...	420	85	420	85	..
Wisconsin...	95	15	95	15	..
Michigan....	..	..	..	..	..
Maple...........	60	15	60	15	..
Minnesota...	..	..	..	..	..
Wisconsin...	60	15	60	15	..
Michigan....	..	..	..	..	..
Elm.............	440	105	440	105	..
Minnesota...	..	..	..	..	..
Wisconsin...	440	105	440	105	..
Michigan....	..	..	..	..	..
Oak.............	80	20	80	20	..
Minnesota...	..	..	..	..	..
Wisconsin...	80	20	80	20	..
Michigan....	..	..	..	..	..
Miscellaneous...	40	10	40	10	..
Minnesota...	..	..	..	..	..
Wisconsin...	40	10	40	10	..
Michigan....	..	..	..	..	..
Hardwood total..	620	150	620	150	..
Minnesota...	..	..	..	..	..
Wisconsin...	620	150	620	150	..
Michigan....	..	..	..	..	..
All species.....	1,135	250	1,135	250	..
Minnesota...	420	85	420	85	..
Wisconsin...	715	165	715	165	..
Michigan....	..	..	..	..	..

Table 16.--Chemical-wood timber drain in the Lake States--1948

Species and origin	Net timber drain, by size class				
	Total		Saw-timber trees		Pole-timber trees
	M bd.ft.	M cu.ft.	M bd.ft.	M cu.ft.	M cu.ft.
Maple...........	6,150	1,650	6,150	1,460	190
Minnesota...	...	...	...	...	...
Wisconsin...	20	...	20	...	...
Michigan....	6,130	1,650	6,130	1,460	190
Birch...........	3,360	900	3,360	800	100
Minnesota...	...	...	...	...	...
Wisconsin...	20	...	20	...	...
Michigan....	3,340	900	3,340	800	100
Elm.............	190	60	190	50	10
Minnesota...	...	...	...	...	...
Wisconsin...	...	...	...	...	...
Michigan....	190	60	190	50	10
Beech...........	1,110	300	1,110	260	40
Minnesota...	...	...	...	...	..
Wisconsin...	...	...	...	...	..
Michigan....	1,110	300	1,110	260	40
Oak.............	190	60	190	50	10
Minnesota...	...	..	...	..	..
Wisconsin...	...	..	...	..	..
Michigan....	190	60	190	50	10
Aspen...........	620	170	620	150	20
Minnesota...	...	...	...	...	..
Wisconsin...	620	170	620	150	20
Michigan....	...	...	...	...	..
Miscellaneous...	190	60	190	50	10
Minnesota...	...	..	...	..	..
Wisconsin...	...	..	...	..	..
Michigan....	190	60	190	50	10
Hardwood total..	11,810	3,200	11,810	2,820	380
Minnesota...	...	...	...	...	...
Wisconsin...	660	170	660	150	20
Michigan....	11,150	3,030	11,150	2,670	360
All species.....	11,810	3,200	11,810	2,820	380
Minnesota...	...	...	...	...	...
Wisconsin...	660	170	660	150	20
Michigan....	11,150	3,030	11,150	2,670	360

NOTE - Miscellaneous species:	Ash
Michigan......	100 percent

Table 17.--Excelsior timber drain in the Lake States--1948

Species and origin	Net timber drain, by size class				
	Total		Saw-timber trees		Pole-timber trees
	M bd. ft.	M cu. ft.	M bd. ft.	M cu. ft.	M cu. ft.
Basswood........	25	80	25	5	75
Minnesota....	..	..	..	..	..
Wisconsin....	15	65	15	5	60
Michigan.....	10	15	10	..	15
Aspen...........	410	6,605	410	115	6,490
Minnesota....	..	..	..	..	..
Wisconsin....	320	3,250	320	90	3,160
Michigan.....	90	3,355	90	25	3,330
Hardwood total..	435	6,685	435	120	6,565
Minnesota....	..	..	..	..	..
Wisconsin....	335	3,315	335	95	3,220
Michigan.....	100	3,370	100	25	3,345
All species.....	435	6,685	435	120	6,565
Minnesota....	..	..	..	..	..
Wisconsin....	335	3,315	335	95	3,220
Michigan.....	100	3,370	100	25	3,345

Table 18.--Fence-post timber drain in the Lake States (5-year average 1945-49)

Species and origin	Net timber drain, by size class: Total		Saw-timber trees		Pole-timber trees	Species and origin	Net timber drain, by size class: Total		Saw-timber trees		Pole-timbe trees
	M bd.ft	M cu.ft.	M bd.ft.	M cu.ft.	M cu.ft.		M bd.ft.	M cu.ft.	M bd. ft	M cu.ft.	M cu.f
Red pine......	120	100	120	20	80	Maple.........	250	450	250	80	37
Minnesota..	60	50	60	10	40	Minnesota..	130	230	130	40	19
Wisconsin..	60	50	60	10	40	Wisconsin..	60	110	60	20	9
Michigan...	..	..	..	..	..	Michigan...	60	110	60	20	9
Jack pine.....	320	280	320	70	210	Birch.........	150	280	150	50	23
Minnesota..	170	150	170	40	110	Minnesota..	30	60	30	10	5
Wisconsin..	90	80	90	20	60	Wisconsin..	60	110	60	20	9
Michigan...	60	50	60	10	40	Michigan...	60	110	60	20	9
Balsam........	140	140	140	40	100	Elm...........	290	520	290	90	43
Minnesota..	110	110	110	30	80	Minnesota..	30	60	30	10	5
Wisconsin..	30	30	30	10	20	Wisconsin..	130	230	130	40	19
Michigan...	..	..	..	..	..	Michigan...	130	230	130	40	19
Tamarack......	430	400	430	100	300	Oak...........	9,150	16,510	9,150	2,690	13,82
Minnesota..	170	150	170	40	110	Minnesota..	1,880	3,410	1,880	550	2,36
Wisconsin..	170	170	170	40	130	Wisconsin..	4,890	8,810	4,890	1,440	7,37
Michigan...	90	80	90	20	60	Michigan...	2,380	4,290	2,380	700	3,59
Cedar.........	4,200	3,960	4,200	900	3,060	Aspen.........	880	1,540	880	260	1,28
Minnesota..	570	510	570	130	380	Minnesota..	440	800	440	130	67
Wisconsin..	790	760	790	170	590	Wisconsin..	250	450	250	70	38
Michigan...	2,840	2,690	2,840	600	2,090	Michigan...	190	290	190	60	23
Hemlock.......	90	80	90	20	60	Miscellaneous	380	690	380	120	57
Minnesota..	..	..	..	..	..	Minnesota..	60	120	60	20	10
Wisconsin..	60	50	60	10	40	Wisconsin..	190	340	190	60	28
Michigan...	30	30	30	10	20	Michigan...	130	230	130	40	19
Softwood total	5,300	4,960	5,300	1,150	3,810	Hardwood total	11,100	19,990	11,100	3,290	16,70
Minnesota...	1,080	970	1,080	250	720	Minnesota..	2,570	4,680	2,570	760	3,92
Wisconsin...	1,200	1,140	1,200	260	880	Wisconsin..	5,580	10,050	5,580	1,650	8,40
Michigan....	3,020	2,850	3,020	640	2,210	Michigan...	2,950	5,260	2,950	880	4,33
						All species...	16,400	24,950	16,400	4,440	20,51
						Minnesota..	3,650	5,650	3,650	1,010	4,64
						Wisconsin..	6,780	11,190	6,780	1,910	9,28
						Michigan...	5,970	8,110	5,970	1,520	6,59

Table 19.--Utility pole timber drain in the Lake States--1948

Species and origin	Net timber drain, by size class				
	Total		Saw-timber trees		Pole-timber trees
	M bd.ft.	M cu.ft.	M bd.ft.	M cu.ft.	M cu.ft.
Red pine.........	280	75	280	60	15
Minnesota.....	280	75	280	60	15
Wisconsin.....	..	..	..	..	..
Michigan......	..	..	..	..	..
Jack pine........	1,250	310	1,250	265	45
Minnesota.....	1,230	300	1,230	260	40
Wisconsin.....	20	10	20	5	5
Michigan......	..	..	..	..	..
Cedar............	3,620	1,510	3,620	880	630
Minnesota.....	2,370	940	2,370	590	350
Wisconsin.....	310	120	310	70	50
Michigan......	940	450	940	220	230
Softwood total...	5,150	1,895	5,150	1,205	690
Minnesota.....	3,880	1,315	3,880	910	405
Wisconsin.....	330	130	330	75	55
Michigan......	940	450	940	220	230
All species......	5,150	1,895	5,150	1,205	690
Minnesota.....	3,880	1,315	3,880	910	405
Wisconsin.....	330	130	330	75	55
Michigan......	940	450	940	220	230

Table 20.--Hewed ties timber drain in the Lake States--1948

Species and origin	Net timber drain, by size class				
	Total		Saw-timber trees		Pole-timber trees
	M bd.ft.	M cu.ft.	M bd.ft.	M cu.ft.	M cu.ft.
Spruce...........	5	..	5	..	..
Minnesota.....	..	..	..	..	..
Wisconsin.....	..	..	..	..	..
Michigan......	5	..	5	..	..
Tamarack.........	5	..	5	..	..
Minnesota.....	5	..	5	..	..
Wisconsin.....	..	..	..	..	..
Michigan......	..	..	..	..	..
Cedar............	50	20	50	10	10
Minnesota.....	10	..	10	..	..
Wisconsin.....	..	..	..	..	..
Michigan......	40	20	40	10	10
Hemlock..........	10	..	10	..	..
Minnesota.....	..	..	..	..	..
Wisconsin.....	..	..	..	..	..
Michigan......	10	..	10	..	..
Softwood total...	70	20	70	10	10
Minnesota.....	15	..	15	..	..
Wisconsin.....	..	..	..	..	..
Michigan......	55	20	55	10	10
All species......	70	20	70	10	10
Minnesota.....	15	..	15	..	..
Wisconsin.....	..	..	..	..	..
Michigan......	55	20	55	10	10

Table 21.--Mine material timber drain in the Lake States--1948

Species and origin	Net timber drain, by size class					Species and origin	Net timber drain, by size class				
	Total		Saw-timber trees		Pole-timber trees		Total		Saw-timber trees		Pole-timber trees
	M bd.ft.	M cu.ft.	M bd.ft.	M cu.ft.	M cu.ft.		M bd.ft.	M cu.ft.	M bd.ft.	M cu.ft.	M cu.ft.
White pine....	75	20	75	15	5	Maple.........	5,850	2,015	5,850	1,510	505
Minnesota...	70	20	70	15	5	Minnesota...	110	30	110	30	..
Wisconsin...	..	..	..	..	..	Wisconsin...	250	100	250	65	35
Michigan....	5	..	5	..	..	Michigan....	5,490	1,885	5,490	1,415	470
Red pine......	390	85	390	70	15	Birch.........	1,825	630	1,825	470	160
Minnesota...	390	85	390	70	15	Minnesota...	55	15	55	15	..
Wisconsin...	..	..	..	..	..	Wisconsin...	160	60	160	40	20
Michigan....	..	..	..	..	..	Michigan....	1,610	555	1,610	415	140
Jack pine.....	5,290	1,130	5,290	955	175	Elm...........	565	180	565	150	30
Minnesota...	5,290	1,130	5,290	955	175	Minnesota...	220	60	220	60	..
Wisconsin...	..	..	..	..	..	Wisconsin...	55	20	55	15	5
Michigan....	..	..	..	..	..	Michigan....	290	100	290	75	25
Spruce........	5	..	5	..	..	Beech.........	330	110	330	85	25
Minnesota...	..	..	..	..	..	Minnesota...	..	..	..	..	..
Wisconsin...	..	..	..	..	..	Wisconsin...	..	..	..	..	..
Michigan....	5	..	5	..	..	Michigan....	330	110	330	85	25
Tamarack......	5,070	1,795	5,070	1,160	635	Oak...........	95	35	95	25	10
Minnesota...	4,000	1,025	4,000	870	155	Minnesota...	..	..	..	..	..
Wisconsin...	90	115	90	25	90	Wisconsin...	55	20	55	15	5
Michigan....	980	655	980	265	390	Michigan...	40	15	40	10	5
Cedar.........	2,810	1,390	2,810	690	700	Miscellaneous	390	110	390	110	..
Minnesota...	1,265	325	1,265	275	50	Minnesota...	390	110	390	110	..
Wisconsin...	60	75	60	15	60	Wisconsin...	..	..	..	..	..
Michigan....	1,485	990	1,485	400	590	Michigan....	..	..	..	..	..
Hemlock.......	360	250	360	100	150	Hardwood total	9,055	3,080	9,055	2,350	730
Minnesota...	..	..	..	..	..	Minnesota...	775	215	775	215	..
Wisconsin...	10	15	10	5	10	Wisconsin...	520	200	520	135	65
Michigan....	350	235	350	95	140	Michigan....	7,760	2,665	7,760	2,000	665
Softwood total	14,000	4,670	14,000	2,990	1,680	All species...	23,055	7,750	23,055	5,340	2,410
Minnesota...	11,015	2,585	11,015	2,185	400	Minnesota...	11,790	2,800	11,790	2,400	400
Wisconsin...	160	205	160	45	160	Wisconsin...	680	405	680	180	225
Michigan....	2,825	1,880	2,825	760	1,120	Michigan....	10,585	4,545	10,585	2,760	1,785

NOTE - Miscellaneous species: Ash - Minnesota, 100 percent.

Table 22.--Cooperage timber drain in the Lake States--1948

Species and origin	Net timber drain, by size class				
	Total		Saw-timber trees		Pole-timber trees
	M bd.ft.	M cu.ft.	M bd.ft.	M cu.ft.	M cu.ft.
Maple.............	50	10	50	10	..
Minnesota.....	50	10	50	10	..
Wisconsin.....	..	..	..	..	..
Michigan......	..	..	..	..	..
Basswood.........	200	60	200	50	10
Minnesota.....	100	20	100	20	..
Wisconsin.....	100	40	100	30	10
Michigan......	..	..	..	..	..
Elm..............	910	200	910	200	..
Minnesota.....	910	200	910	200	..
Wisconsin.....	..	..	..	..	..
Michigan......	..	..	..	..	..
Oak..............	995	280	995	230	50
Minnesota.....	555	120	555	120	..
Wisconsin.....	440	160	440	110	50
Michigan......	..	..	..	..	..
Aspen............	50	10	50	10	..
Minnesota.....	50	10	50	10	..
Wisconsin.....	..	..	..	..	..
Michigan......	..	..	..	..	..
Cottonwood.......	405	90	405	90	..
Minnesota.....	405	90	405	90	..
Wisconsin.....	..	..	..	..	..
Michigan......	..	..	..	..	..
Miscellaneous....	50	10	50	10	..
Minnesota.....	50	10	50	10	..
Wisconsin.....	..	..	..	..	..
Michigan......	..	..	..	..	..
Hardwood total...	2,660	660	2,660	600	60
Minnesota.....	2,120	460	2,120	460	..
Wisconsin.....	540	200	540	140	60
Michigan......	..	..	..	..	..
All species......	2,660	660	2,660	600	60
Minnesota.....	2,120	460	2,120	460	..
Wisconsin.....	540	200	540	140	60
Michigan......	..	..	..	..	..

NOTE - Miscellaneous species: Ash - Minnesota, 100 percent.

Table 23.--Miscellaneous products timber drain in the Lake States (5-year average 1945-49)

Species and origin	Net timber drain, by size class				
	Total		Saw-timber trees		Pole-timber trees
	M bd.ft.	M cu.ft.	M bd.ft.	M cu.ft.	M cu.ft.
White pine..........	750	220	750	150	70
Minnesota........	250	70	250	50	20
Wisconsin........	190	70	190	40	30
Michigan.........	310	80	310	60	20
Red pine............	410	110	410	80	30
Minnesota........	200	50	200	40	10
Wisconsin........	50	20	50	10	10
Michigan.........	160	40	160	30	10
Jack pine...........	950	270	950	190	80
Minnesota........	390	110	390	80	30
Wisconsin........	140	50	140	30	20
Michigan.........	420	110	420	80	30
Spruce..............	250	70	250	50	20
Minnesota........	100	30	100	20	10
Wisconsin........	50	10	50	10	..
Michigan.........	100	30	100	20	10
Balsam..............	660	180	660	130	50
Minnesota........	250	70	250	50	20
Wisconsin........	50	20	50	10	10
Michigan.........	360	90	360	70	20
Tamarack............	250	70	250	50	20
Minnesota........	100	30	100	20	10
Wisconsin........	50	10	50	10	..
Michigan.........	100	30	100	20	10
Cedar...............	1,420	760	1,420	340	420
Minnesota........	340	100	340	70	30
Wisconsin........	580	210	580	120	90
Michigan.........	500	450	500	150	300
Hemlock.............	150	50	150	30	20
Minnesota........	..	..	..	..	..
Wisconsin........	50	20	50	10	10
Michigan.........	100	30	100	20	10
Softwood total......	4,840	1,730	4,840	1,020	710
Minnesota........	1,630	460	1,630	330	130
Wisconsin........	1,160	410	1,160	240	170
Michigan.........	2,050	860	2,050	450	410

Table 23.--Miscellaneous products timber drain in the Lake States (5-year average 1945-49)--continued

Species and origin	Net timber drain, by size class				
	Total		Saw-timber trees		Pole-timber trees
	M bd.ft.	M cu.ft.	M bd.ft.	M cu.ft.	M cu.ft.
Maple	2,080	520	2,080	400	120
Minnesota	..	..	..	..	..
Wisconsin	410	130	410	90	40
Michigan	1,670	390	1,670	310	80
Birch	1,540	310	1,540	290	20
Minnesota	1,350	260	1,350	250	10
Wisconsin	140	40	140	30	10
Michigan	50	10	50	10	..
Basswood	940	220	940	190	30
Minnesota	530	100	530	100	..
Wisconsin	320	100	320	70	30
Michigan	90	20	90	20	..
Elm	430	100	430	80	20
Minnesota	..	..	..	..	..
Wisconsin	..	..	..	..	..
Michigan	430	100	430	80	20
Beech	2,890	800	2,890	640	160
Minnesota	..	..	..	..	..
Wisconsin	..	..	..	..	..
Michigan	2,890	800	2,890	640	160
Oak	510	120	510	100	20
Minnesota	50	10	50	10	..
Wisconsin	30	10	30	10	..
Michigan	430	100	430	80	20
Aspen	5,300	2,190	5,300	1,300	890
Minnesota	4,240	1,440	4,240	1,080	360
Wisconsin	360	540	360	90	450
Michigan	700	210	700	130	80
Miscellaneous	390	100	390	80	20
Minnesota	..	..	..	..	..
Wisconsin	70	30	70	20	10
Michigan	320	70	320	60	10
Hardwood total	14,080	4,360	14,080	3,080	1,280
Minnesota	6,170	1,810	6,170	1,440	370
Wisconsin	1,330	850	1,330	310	540
Michigan	6,580	1,700	6,580	1,330	370
All species	18,920	6,090	18,920	4,100	1,990
Minnesota	7,800	2,270	7,800	1,770	500
Wisconsin	2,490	1,260	2,490	550	710
Michigan	8,630	2,560	8,630	1,780	780

Table 24.--Total timber drain in the Lake States--1948

Species and origin	Net timber drain, by size class					Species and origin	Net timber drain, by size class				
	Total		Saw-timber trees		Pole-timber trees		Total		Saw-timber trees		Pole-timber trees
	M bd. ft.	M cu.ft	M bd.ft.	M cu.ft.	M cu.ft.		M bd.ft.	M cu.ft.	M bd.ft.	M cu.ft.	M cu.ft.
White pine....	60,725	17,780	60,725	13,065	4,715	Balsam........	17,910	31,680	17,910	3,750	27,930
Minnesota...	9,510	3,760	9,510	2,055	1,705	Minnesota...	7,800	12,890	7,800	1,740	11,150
Wisconsin...	29,980	8,360	29,980	6,470	1,890	Wisconsin...	3,080	7,190	3,080	630	6,560
Michigan....	21,235	5,660	21,235	4,540	1,120	Michigan....	7,030	11,600	7,030	1,380	10,220
Red pine......	51,995	15,645	51,995	10,805	4,840	Tamarack......	10,755	6,945	10,755	3,680	3,265
Minnesota...	18,850	7,110	18,850	3,920	3,190	Minnesota...	7,265	4,515	7,265	2,670	1,845
Wisconsin...	23,575	6,085	23,575	4,885	1,200	Wisconsin...	1,820	1,325	1,820	565	760
Michigan....	9,570	2,450	9,570	2,000	450	Michigan....	1,670	1,105	1,670	445	660
Jack pine.....	75,910	57,905	75,910	15,885	42,020	Cedar.........	21,840	10,630	21,840	5,030	5,600
Minnesota...	49,900	36,775	49,900	10,370	26,405	Minnesota...	5,345	2,255	5,345	1,275	980
Wisconsin...	10,460	11,850	10,460	2,355	9,495	Wisconsin...	3,900	2,015	3,900	945	1,070
Michigan....	15,550	9,280	15,550	3,160	6,120	Michigan....	12,595	6,360	12,595	2,810	3,550
Spruce........	24,320	35,620	24,320	5,010	30,610	Hemlock......	232,150	63,450	232,150	48,170	15,280
Minnesota...	11,870	21,880	11,870	2,470	19,410	Minnesota...	...	...	...	...	...
Wisconsin...	2,370	3,110	2,370	490	2,620	Wisconsin...	59,610	20,345	59,610	12,855	7,490
Michigan....	10,080	10,630	10,080	2,050	8,580	Michigan....	172,540	43,105	172,540	35,315	7,790
						Softwood total	495,605	239,655	495,605	105,395	134,260
						Minnesota...	110,540	89,185	110,540	24,500	64,685
						Wisconsin...	134,795	60,280	134,795	29,195	31,085
						Michigan....	250,270	90,190	250,270	51,700	38,490

Table 24.--Total timber drain in the Lake States--1948
(continued)

Species and origin	Net timber drain, by size class: Total		Saw-timber trees		Pole-timber trees	Species and origin	Net timber drain, by size class: Total		Saw-timber trees		Pole-timber trees
	M bd.ft.	M cu.ft.	M bd.ft.	M cu.ft.	M cu.ft.		M bd.ft.	M cu.ft.	M bd.ft.	M cu.ft.	M cu.ft.
Maple.....	302,290	90,565	302,290	75,005	15,560	Oak..........	158,170	77,785	158,170	46,815	30,970
Minnesota	3,410	1,415	3,410	950	465	Minnesota...	21,355	12,430	21,355	7,150	5,280
Wisconsin	74,430	23,275	74,430	18,740	4,535	Wisconsin...	89,045	41,310	89,045	25,355	15,955
Michigan.	224.450	65,875	224,450	55,315	10,560	Michigan....	47,770	24,045	47,770	14,310	9,735
Birch......	113,755	35,845	113,755	28,300	7,545	Aspen.........	136,750	147,040	136,750	37,875	109,165
Minnesota.	2,775	3,390	7,775	2,415	975	Minnesota...	68,030	58,325	68,030	19,300	39,025
Wisconsin.	27,290	9,960	27,290	7,120	2,840	Wisconsin...	36,240	48,190	36,240	9,590	38,600
Michigan..	78,690	22,495	78,690	18,765	3,730	Michigan....	32,480	40,525	32,480	8,985	31,540
Basswood....	64,025	19,660	64,025	15,905	3,755	Cottonwood....	11,325	3,325	11,325	2,680	645
Minnesota.	14,730	5,280	14,730	4,010	1,270	Minnesota...	6,795	2,105	6,795	1,600	505
Wisconsin.	26,515	7,605	26,515	6,325	1,280	Wisconsin...	1,620	430	1,620	380	50
Michigan..	22,780	6,775	22,780	5,570	1,205	Michigan....	2,910	790	2,910	700	90
Elm.........	97,375	34,245	97,375	25,985	8,260	Miscellaneous.	39,190	15,860	39,190	11,560	4,300
Minnesota..	19,170	7,580	19,170	5,650	1,930	Minnesota...	9,310	4,880	9,310	3,490	1,390
Wisconsin.	33,455	10,605	33,455	8,360	2,245	Wisconsin...	13,650	5,170	13,650	3,720	1,450
Michigan..	44,750	16,060	44,750	11,975	4,085	Michigan....	16,230	5,810	16,230	4,350	1,460
Beech.......	39,730	10,900	39,730	9,335	1,565	Hardwood total	962,610	435,225	962,610	253,460	181,765
Minnesota.	...	...	...	..	..	Minnesota...	150,575	95,405	150,575	44,565	50,840
Wisconsin.	960	350	960	270	80	Wisconsin...	303,205	146,895	303,205	79,860	67,035
Michigan..	38,770	10,550	38,770	9,065	1,485	Michigan....	508,830	192,925	508,830	129,035	63,890
						All species...	1,458,215	674,880	1,458,215	358,855	316,025
						Minnesota...	261,115	184,590	261,115	69,065	115,525
						Wisconsin...	438,000	207,175	438,000	109,055	98,120
						Michigan....	759,100	283,115	759,100	180,735	102,380

NOTE - Miscellaneous species:	Ash	Cherry	Hickory	Walnut	Yellow-poplar	Other
Minnesota (percent)	39	0.5	..	1.5	..	59
Wisconsin (percent)	65	0.5	1	2.5	..	31
Michigan (percent)	51	5.5	4	6.0	2.5	31